

WHAT IS CLAIMED IS:

1. An ink jet printing apparatus which uses a  
print head for ejecting a plurality of color inks and  
5 a print head for ejecting a processing liquid contrib-  
uting to fixing the inks on a print medium to apply  
the inks and the processing liquid to the print medium  
to form an image, the ink jet printing apparatus com-  
prising:

10 a color conversion processing means for generating  
multivalued data for each of the color inks and multi-  
valued data for the processing liquid based on multi-  
valued image data corresponding to an image to be  
printed; and

15 a quantization processing means for converting the  
multivalued data for each of the color inks and the  
multivalued data for the processing liquid generated  
by the color conversion processing means into quan-  
tized data for each of the color inks and quantized  
20 data for the processing liquid.

2. An ink jet printing apparatus according to  
claim 1, wherein the multivalued image data is RGB  
luminance data.

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3. An ink jet printing apparatus according to  
claim 1, wherein the quantization processing means

converts the color ink multivalued data and the processing liquid multivalued data into binary data for each of the color inks and binary data for the processing liquid and which, based on the converted color ink binary data and the processing liquid binary data, drives the print heads to eject the inks and the processing liquid from the print heads.

4. An ink jet printing apparatus according to claim 1, wherein the color conversion processing means sets a rate of a processing liquid application volume with respect to a sum of color ink application volumes such that the rate of the processing liquid application volume in a relatively low gray scale region is higher than in other regions and that the rate of the processing liquid application volume in a relatively high gray scale region is lower than in other regions;

wherein the color conversion processing means generates processing liquid application data such that a total of the processing liquid application volume and the color ink application volumes is not in excess of a water accommodation capacity of the print medium.

5. An ink jet printing apparatus according to claim 1, wherein for two inks of the same color but with different ratios of a including colorant, the color conversion processing means generates processing

liquid application data such that a rate of a processing liquid application volume for the ink having a relatively small content of colorant is smaller a rate of a processing liquid application volume for the ink  
5 having a relatively large content of colorant.

6. An ink jet printing apparatus according to claim 1, wherein the inks are anionic or cationic water-based inks containing colorants, the processing  
10 liquid is a water-based liquid compound containing disperse microparticles charged on their surface in a polarity opposite to that of the water-based inks.

7. An ink jet printing apparatus according to  
15 claim 6, wherein when the inks and the processing liquid are applied to the print medium, the colorants in the inks adsorb in a single-molecular state to surfaces of the microparticles in the processing liquid.

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8. An ink jet printing apparatus according to claim 6, wherein the microparticles in the processing liquid are alumina or alumina hydrate.

25 9. An image processing method for processing data used in an ink jet printing apparatus, wherein the ink jet printing apparatus uses a print head for ejecting

a plurality of color inks and a print head for ejecting a processing liquid contributing to fixing the inks on a print medium to apply the inks and the processing liquid to the print medium to form an image,

5 the image processing method comprising:

a color conversion process for generating multivalued data for each of the color inks and multivalued data for the processing liquid based on multivalued image data corresponding to an image to be printed;

10 and

a quantization process for converting the multivalued data for each of the color inks and the multivalued data for the processing liquid generated by the color conversion process into quantized data for each  
15 of the color inks and quantized data for the processing liquid.

10. A control program for processing data used in an ink jet printing apparatus, wherein the ink jet  
20 printing apparatus uses a print head for ejecting a plurality of color inks and a print head for ejecting a processing liquid contributing to fixing the inks on a print medium to apply the inks and the processing liquid to the print medium to form an image, the control program comprising:  
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a process for generating multivalued data for each of the color inks and multivalued data for the proc-

essing liquid based on multivalued image data corresponding to an image to be printed; and

a process for converting the multivalued data for the each of the color inks and the multivalued data  
5 for the processing liquid generated by the color conversion process into quantized data for each of the color inks and quantized data for the processing liquid;

wherein these process are executed by a computer.